

PATENT COOPERATION TREATY

Rec'd PCT/PTO 20 JAN 2005

From the
INTERNATIONAL PRELIMINARY EXAMINING AUTHORITY

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PCT

To:

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SERVICE BREVETS & CONTRATS

Reçu
le

09 SEP. 2004

SRPC - Clamart

WRITTEN OPINION
(PCT Rule 66)

Date of mailing
(day/month/year)

27.08.2004

Applicant's or agent's file reference

WO 21.1045

WL-PL

REPLY DUE

within 2 month(s)
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International application No.

PCT/EP 03/50262

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25.06.2003

Priority date (day/month/year)

23.07.2002

International Patent Classification (IPC) or both national classification and IPC
G01F1/15

HT 27 OCT 04

Applicant

SERVICES PETROLIERS SCHLUMBERGER

1. This written opinion is the **second** drawn up by this International Preliminary Examining Authority.
2. This opinion contains indications relating to the following items:
 - I ☒ Basis of the opinion
 - II ☐ Priority
 - III ☐ Non-establishment of opinion with regard to novelty, inventive step and industrial applicability
 - IV ☐ Lack of unity of invention
 - V ☒ Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement
 - VI ☐ Certain documents cited
 - VII ☐ Certain defects in the international application
 - VIII ☐ Certain observations on the international application
3. The applicant is hereby **invited to reply** to this opinion.

When? See the time limit indicated above. The applicant may, before the expiration of that time limit, request this Authority to grant an extension, see Rule 66.2(d).

How? By submitting a written reply, accompanied, where appropriate, by amendments, according to Rule 66.3. For the form and the language of the amendments, see Rules 66.8 and 66.9.

Also: For an additional opportunity to submit amendments, see Rule 66.4.
For the examiner's obligation to consider amendments and/or arguments, see Rule 66.4 bis.
For an informal communication with the examiner, see Rule 66.6.

If no reply is filed, the international preliminary examination report will be established on the basis of this opinion.
4. The final date by which the international preliminary examination report must be established according to Rule 69.2 is: 23.11.2004

Name and mailing address of the international preliminary examining authority:



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I. Basis of the opinion

1. With regard to the **elements** of the international application (*Replacement sheets which have been furnished to the receiving Office in response to an invitation under Article 14 are referred to in this opinion as "originally filed"*):

Description, Pages

1-27 as originally filed

Claims, Numbers

1-19 as originally filed

Drawings, Sheets

1/7-7/7 as originally filed

2. With regard to the **language**, all the elements marked above were available or furnished to this Authority in the language in which the international application was filed, unless otherwise indicated under this item.

These elements were available or furnished to this Authority in the following language: , which is:

- ☐ the language of a translation furnished for the purposes of the international search (under Rule 23.1(b)).
- ☐ the language of publication of the international application (under Rule 48.3(b)).
- ☐ the language of a translation furnished for the purposes of international preliminary examination (under Rule 55.2 and/or 55.3).

3. With regard to any **nucleotide and/or amino acid sequence** disclosed in the international application, the international preliminary examination was carried out on the basis of the sequence listing:

- ☐ contained in the international application in written form.
- ☐ filed together with the international application in computer readable form.
- ☐ furnished subsequently to this Authority in written form.
- ☐ furnished subsequently to this Authority in computer readable form.
- ☐ The statement that the subsequently furnished written sequence listing does not go beyond the disclosure in the international application as filed has been furnished.
- ☐ The statement that the information recorded in computer readable form is identical to the written sequence listing has been furnished.

4. The amendments have resulted in the cancellation of:

- ☐ the description, pages:
- ☐ the claims, Nos.:
- ☐ the drawings, sheets:

5. ☐ This opinion has been established as if (some of) the amendments had not been made, since they have been considered to go beyond the disclosure as filed (Rule 70.2(c)).

6. Additional observations, if necessary:

V. Reasoned statement under Rule 66.2(a)(ii) with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement**1. Statement**

Novelty (N)	Claims	1,3-5,9,10,13
Inventive step (IS)	Claims	1-19
Industrial applicability (IA)	Claims	

2. Citations and explanations**see separate sheet**

Reference is made to the following documents:

- D1: DE 100 60 621 A (DENSO CORP) 13 June 2001 (2001-06-13)
- D2: WO 99/49322 A (CONTINENTAL TEVES AG & CO OHG ; LOHBERG PETER; ZYDEK MICHAEL) 30 September 1999 (1999-09-30)
- D3: US-A-3 636 767 (DUFFY LAURENCE SIDNEY) 25 January 1972 (1972-01-25)
- D4: US-A-3 455 162 (MICHENER ROBERT ET AL) 15 July 1969 (1969-07-15)
- D5: EP-A-1 074 843 (BOSCH GMBH ROBERT) 7 February 2001 (2001-02-07)
- D6: DE 196 18 867 A (BOSCH GMBH ROBERT) 27 February 1997 (1997-02-27)

Re Item V

Reasoned statement with regard to novelty, inventive step or industrial applicability; citations and explanations supporting such statement

1. Clarity

Claims 1, 18 have been drafted as separate independent apparatus claims. Claim 18 describes a *magnetic system...* comprising a measuring device comprising all features of claim 1 where the *object* is specified as *non-magnetic propeller integral with a magnet*. Claim 18 is thus actually a dependent claim and should be drafted as such. In their present form the aforementioned claims lack conciseness and as such do not meet the requirements of Article 6 PCT.

2. Novelty

The present application does not meet the criteria of Article 33(1) PCT, because the subject-matter of claims 1, is not new in the sense of Article 33(2) PCT.

- 2.1 The document D1 (see column 6, line 15 - column 8, line 23; figures 1, 2, 7i, 8i, 9i, 10i, 11i, 12i) discloses (the references in parentheses applying to this document):
- A device ("Rotationserfassungsvorrichtung (2)") for measuring the speed and direction of rotation of an object ("Rotationsmagnet (1)"), near to which it is placed; said device comprising:
 - a magnetic detection device ("Magnetsensoren (3,4)") that delivers, in response to a rotation of the object (1) generating a magnetic field variation, signals representative of

its speed and its direction of rotation,

- a conductor ("Signalleitung (13b)...(mit Massenanschluss verbunden)") intended to be connected to a power source to supply current to the magnetic detection device (3,4) at least,
- current receptor means (12) placed between the magnetic detection device (3,4) and the conductor (13b) that create, from signals coming from the magnetic detection device (3,4), a modulation of the current (Is) flowing in the conductor (13b), said modulated current (Is) reflecting both the speed and the direction of rotation of the object (1).

Claim 1 is thus not novel.

In the same way D2 see passages as cited in the search report could be used against novelty of claim 1.

2.2 Dependent claims 3-5,9,10,13 are also not novel:

- claim 3: D1 (see passages as cited above) shows an output current which frequency is reflecting the speed of the object;
- claim 4: D1 (see passages as cited above) shows an output current which form is reflecting the direction of rotation of the object;
- claim 5: D1 (see passages as cited above) discloses a magnetic detection device providing two pairs of signals out of phase;
- claim 9: D1 (see passages as cited above) discloses a "digital sensor" providing signals representative of speed and direction of rotation;
- claim 10: D1 (see passages as cited above) discloses different "cyclic ratios" of the modulated current depending on the direction of rotation;
- claim 13: D1 (see passages as cited above) discloses means of mixing providing a speed / direction signal controlling the output current;

3. Inventive step

3.1 Apart from the above mentioned lack of conciseness, claim 18 also does not meet the requirement of Article 33(3) PCT of involving an inventive step.

D1 does not disclose the application of the sensor of claim 1 and its signal transmission circuitry for a flow measuring device.

D1 therefore does not disclose the feature that said rotating object is

- a non-magnetic propeller being integral with at least one magnet.

Claim 18 is therefore new in the sense of Article 33 (2) PCT:

The specific aim of the present invention is to propose a device for measuring the speed and direction of rotation of an object, that is particularly compact, and that is suited to operating in severe environments and which has the lowest possible number of electrical conductors for its power supply and the transmission of the information that it delivers.

The field to which this problem belongs and in which the skilled person is working, is the common general field of rotational speed measurement and of transmission of signals of measured values to a remote receiver.

As already indicated in the description of the present application (see page 1, paragraphs 1-3), the application fields comprise *the oil, nuclear, robotics and automobile sectors*, in which fields the device of the invention has to operate in severe environments.

Being aware of the common nature of the underlying problems, the skilled person will employ the technical solution already used in one application field for the device of the other application field. The application in the other field does not require a modification of the measuring device itself, but only needs its placement in proximity of a specific rotating object, which is a well known propeller, adapted for the property to be measured.

The combination of the measurement device of claim 1 with the propeller-magnet assembly of claim 18 does therefore not involve an inventive step.

2.2 Dependent claims 2, 6-8, 11,12, 14-17, 19 also do not involve an inventive step:

- claim 2: the use of a resistor and a commutation element as current receptor is common knowledge in the field and not inventive;
- claims 6,7,11: the use of two comparators for two thresholds is in the given context well known and not inventive;
- claim 8: the representation of rotation direction information by the chosen time axis symmetry is well known and not inventive;
- claim 12: the *switchover* for encoding the direction is well known and not inventive;
- claim 14: the use of *logic means* for the mixing means is common knowledge;
- claim 15,16: the choice of the material for the enclosure is standard and as such dictated by the concrete environmental situation and the requirements of the measurement;
- claim 17: the use of a second conductor is e.g. known from D1;

**WRITTEN OPINION
SEPARATE SHEET**

International application No. PCT/EP 03/50262

- claim 19: the placement of propeller and measuring device in the same line is well known and not inventive.